

Jet Ignition for Super-Efficient Power Generation and Propulsion

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Jet Ignition for Super-Efficient Power Generation and Propulsion Global environmental concerns and energy price hikes compel more efficient transport and power generation with disruptively different technologies. Wave rotor technology developed at IUPUI employs new combustion and ignition processes that develop high pressure and increased power resulting in enormous energy and cost savings. The wave rotor combustor (WRC) uses pressure wave compression and confined combustion in multiple rotating chambers. For ignition, partially combusted gas in a transient jet from a pre-chamber penetrates and ignites the main chamber lean mixture, over multiple ignition points. This intense ignition overcomes mixture non-uniformity and improves efficiency and emission. Chemically active radicals and fast turbulent mixing in the jets create an explosion two orders more energetic than a spark. Jet ignition offer the advantage of fast ignition and rapid complete combustion of leaner and stratified mixtures, mitigate heat losses to the walls and minimize pollutant emissions, while enabling higher engine efficiency.